Short Communications

IV Seminar on Categories and Applications

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Complex and permutation representations of p-local finite groups

This is a report on joint works with L. Morales and A. Libman.
We analyze the results of Jackowski and Oliver on the Grothendieck groups of vector bundles over classifying spaces of finite groups. Focusing on a prime p, we emphasize on how these results depend only on the p-local structure of G. Therefore, the proof adapts well to the theory of p-local finite groups and a similiar result holds. In particular, we show how to construct homotopy monomorphisms from classifying spaces of p-local finite groups into classifying spaces of unitary groups. The existence of faithful complex representations is used in the work of Dwyer-Greenless-Iyengar to show that the cochains on classifying spaces are Gorenstein. As a main application, we adapt their proof to the context of p-local finite groups.
On the other hand, we are interested in the construction of homotopy monomorphisms from p-local finite groups to classifying spaces symmetric groups similar to the regular representation of a finite group. We construct such a monomorphisms using similar techniques to those ones used to discuss complex representations.

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